

Appl. No. : 09/552,383  
Filed : April 19, 2000

#### REMARKS

In the Office Action mailed November 21, 2003 (Paper No. 18), the Examiner rejected Claims 30-37 and 56-62 under 35 USC §103(a) as being unpatentable over Denning et al. (U.S. Patent Application No. 2002/0092763 A1) in view of the Sandhu et al. reference (U.S. Patent No. 5,069,002). The Examiner also rejected the pending claims of the application under the judicially created doctrine of obviousness-type double patenting. By this paper, the Applicant has amended Claims 30 and 56 to highlight the subject matter that the Applicant believes is allowable over the art of record and is further submitting concurrently herewith a Terminal Disclaimer to overcome the obviousness-type double patenting rejection. Hence, reconsideration of the above-captioned application in light of the amendments and remarks contained herein is now respectfully requested.

After carefully reviewing the Denning and Sandhu references, the Applicant notes that neither Denning nor Sandhu nor any combination thereof teaches a method of forming the dielectric layer by positioning a shield layer *of a different material than the dielectric layer* on the dielectric layer and then a sacrificial layer on top of the shield layer and then subsequently removing the sacrificial layer through CMP and halting the CMP process upon detecting the shield layer such that the dielectric layer *and the shield layer* remain. By positioning both the sacrificial layer and the shield layer on top of the dielectric layer, contaminants from a subsequent copper deposition step can be completely removed by removing the sacrificial layer. However, halting the CMP process at the shield layer results in the dielectric layer not being thinned.

After carefully reviewing the Denning et al. reference, the Applicant notes that the CMP process that removes the copper seed layer 222 also results in the removal of the barrier layer 220 in the regions on top of the dielectric layer (*See, Figure 1*). As a consequence, there will be inherently some thinning of the dielectric layer 210. As such, there is no teaching of halting the CMP process after a sacrificial layer has been removed but prior to the complete removal of the shield layer. Hence, there is no layer above the dielectric layer that remains following the CMP process and, consequently, the dielectric layer must then be thinned.

The Applicant has further amended the method claims to indicate that the shield layer is formed of a material other than the dielectric layer. This particular limitation distinguishes an

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interpretation of the Denning reference that the dielectric layer 210 would actually form a shield layer for the dielectric layer 206. Based upon the foregoing, the Applicant submits that Claim 30 as amended is allowable over the art of record. Similar amendments have also been made to independent Claim 56.

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SUMMARY

Based upon the foregoing, the Applicant believes that Claims 30 and 56 are allowable over the art of record for the reasons given above. Moreover, the Applicant further submits that Claims 31-37 and 57-62 define additional patentable subject matter and are further allowable due to their respective dependencies on Claims 30 and 56. The Applicant, therefore, believes that the above-captioned application is in condition for allowance and requests the prompt allowance of the same. Should there be any impediment to the prompt allowance of this application that could be resolved by a telephone conference, the Examiner is respectfully requested to call the undersigned at the number shown below.

Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

KNOBBE, MARTENS, OLSON & BEAR, LLP

Dated: 2/23/04

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